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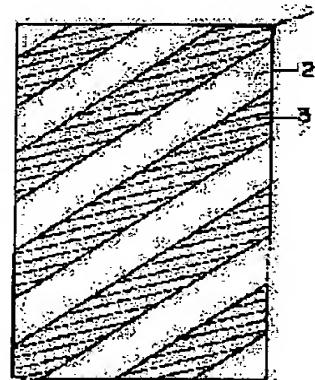
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(54) SHEET FOR CLEANING

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a cleaning sheet improved in an ability for cleaning the uneven parts of a surface to be cleaned, capable of gathering dusts having sizes in a wide range, preventing the gathered dusts or the self fibers of the non-woven fabric from dropping, and having a large sheet strength.

SOLUTION: This cleaning sheet 1 is produced by arranging two kinds of thermally fusible short fibers having a fiber length of 5mm and different fiber diameters (fineness: 6d/f, 2d/f) into three-dimensional structures, respectively, by an air-laying method, thermally fusing the arranged products, respectively, to form two soft, bulky, suitably elastic and strong non-woven fabrics 2, 3, and subsequently combining the non-woven fabrics 2, 3 comprising two kinds of the different diameter thermally fusible short fibers in an arbitrary shape.



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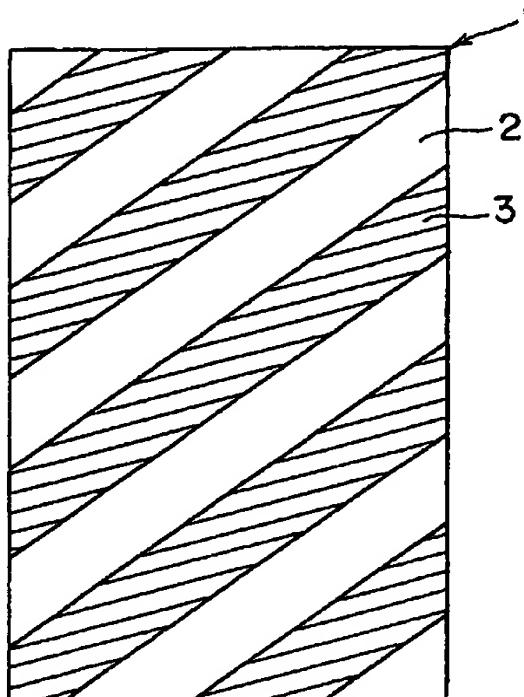
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(54)【発明の名称】清掃用シート

(57)【要約】

【課題】清掃用シートにおいて、被清掃面の凸凹部の抓持性を向上させ、大小広範囲のごみの捕集を可能にし、その捕集したごみ、および不織布自身の繊維の脱落を防ぎ、さらにシート強度のあるものとする。

【解決手段】繊維長が5mmでクリンプを有する、2種類の異なる繊維径(繊度6d/f、2d/f)の熱融性短繊維を、それぞれエアレイ法により三次元配向させ熱融着し、ソフトで嵩高性に富み、適度の弾力性さらに強度のある不織布(2)(3)とし、これら2種類の異なる繊維径の熱融着性短繊維からなる不織布(2)(3)を、任意の形状で組み合わせて、清掃用シート(1)とする。



【特許請求の範囲】

【請求項1】異なる繊維径の熱融着性短纖維をそれぞれ纖維が三次元配向した不織布とし、前記2種類もしくはそれ以上の異なる繊維径の熱融着性短纖維からなる不織布を、任意の形状で組み合わせて構成したことを特徴とする清掃用シート。

【請求項2】熱融着性短纖維が纖維長2~15mmであり、かつクリンプを有することを特徴とする請求項1記載の清掃用シート。

【請求項3】繊度が1.5~3d/fの熱融着性纖維からなる不織布と、6~32d/fの熱融着性纖維からなる不織布を組み合わせて構成したことを特徴とする請求項1~2記載の清掃用シート。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、不織物を利用した業務用、家庭用の清掃用シートに関し、広範囲の大きさのごみ、埃等を一枚のシートで拭き取ることのできる乾式清掃用シートに関する。

【0002】

【従来の技術】従来、纖維材料を用いた多くの清掃用具が開発され、業務用、家庭用と共に、目的に応じて広く使用されている。例えば、織布あるいは不織布等からなる湿式または乾式の床清掃用シート等があり、特に不織布を用いた物に関しては、使い捨てタイプの物も多く、使いやすく手軽に使用できるため、近年急速に普及している。

【0003】例えば、特開平2-152430号公報には、熱融着性纖維を含む不織布に洗浄活性物質を含浸させ、大小のごみを捕集保持させる技術が開示されている。特開平5-93350号公報には、極細纖維層と親水性纖維を主体とする親水性纖維層と、これら層間に熱融着性纖維を含む融着性纖維層を形成した、少なくとも3層からなる不織物により、水性の汚れや薬液などを払拭、保持させたものが開示されている。特開平6-240551号公報には、荷電不織布の静電気性付着を利用したものが開示されている。特開平6-14859号公報には、基台シートに熱融着性纖維を含む不織布をキルティング加工することにより、大小広範囲のごみを捕集し、耐毛羽抜け性に優れ、柔軟性を良くさせたものが開示されている。また、特開平2-191422号公報には、糸断面が特殊形状であり、さらに螺旋状の長纖維を用いた熱融着性纖維からなる不織布をエンボス加工することにより、シート強度があり、纖維脱落がなく、塵埃吸着力および塵埃保持力を持たせたものが開示されている。さらに、特開平7-184815号公報では、纖維集合体に網状シートを絡合させ、シート強度があり、かつ、ごみの捕集性能に必要な纖維自由度はあるが、纖維脱落性をなくしたもののが開示されている。

【0004】

【発明が解決しようとする課題】しかしながら、これら清掃用シートは、モップ状の清掃用品と比較すると、被清掃面の凸凹部における払拭性が余り良くないという欠点がある。また、土、埃などの小さなごみを付着、吸着除去すること、髪の毛、糸屑などの大きなごみを捕集することの、どちらか一方についてには良くできるが、両方を一度に満足させることができず、かつ、捕集したごみが脱落しやすい。さらに不織布であるため、不織布自身の纖維が脱落しやすく、シート強度も余りないといった、多くの難点がある。また、製造時に、多大な手間とコストがかかるのも事実である。そこで、本発明は、被清掃面の凸凹部の払拭性を向上させ、大小広範囲のごみの捕集を可能にし、その捕集したごみ、および不織布自身の纖維の脱落を防ぎ、さらに、シート強度のある清掃用シートを、より簡便に提供することを目的とする。

【0005】

【課題を解決するための手段】本発明の清掃用シートは、異なる繊維径の熱融着性短纖維をそれぞれ纖維が三次元配向した不織布とし、前記2種類もしくはそれ以上の異なる繊維径の熱融着性短纖維からなる不織布を、任意の形状で組み合わせて構成したことを特徴とする。また、熱融着性短纖維が纖維長2~15mmであり、かつクリンプを有することを特徴とし、繊度が1.5~3d/fの熱融着性纖維からなる不織布と、6~32d/fの熱融着性纖維からなる不織布を組み合わせて構成したことを特徴とする。

【0006】

【作用】本発明の、異なる繊維径の熱融着性短纖維をそれぞれ纖維が三次元配向した不織布とし、前記2種類もしくはそれ以上の異なる繊維径の熱融着性短纖維からなる不織布を、任意の形状で組み合わせて構成した清掃用シートで被清掃面を拭うと、太い纖維の不織布部分では、髪の毛や糸屑などの荒く大きなごみが取れ、また、細い纖維の不織布部分では、土や埃などの微細埃や小さなごみが取れ、大小広範囲のごみの捕集が可能である。

【0007】本発明の清掃用シートの構成纖維は熱融着性纖維であり、構成纖維同士が融着しているため、清掃時に上記構成纖維が脱落することはない。また、ヒートシール適性に優れているため、それぞれ異なる繊維径の不織布同士を、容易に接着でき、多様な不織布の配置が可能である。

【0008】本発明の清掃用シートは、両不織布とともに纖維配向は三次元の立体構造を取っているため、垂直方向に固着した纖維が、被清掃面のごみを拭き取りやすく、また、纖維がクリンプを有する短纖維であるため、ソフトで嵩高性に富み、適度の弾力性を持ち、拭き取ったごみを纖維間の空間に取込み、強固に保持し、ごみの脱落を防ぐことができ、かつ、被清掃面の小さな溝や凹部までの拭き取りが可能である。さらに、三次元配向の為、縱横のシート強度差が少なく、どの方向に拭き取つ

てもシート破断はなく、また、ネット等の補強材を使用する必要がない。

【0009】

【発明の実施の形態】次に、図面に基づいて、本発明を具体的に説明する。なお、清掃用シートのそれぞれの不織布の配置方法は、これら実施例に限定されるものではない。

【0010】図1は、実施例として、太い繊維からなる不織布2(繊度6d/f、繊維長5mm、坪量30g/m²)と、細い繊維からなる不織布3(繊度2d/f、繊維長5mm、坪量20g/m²)を、5cm幅のストライプ状に交互に熱融着させた清掃用シート1である。上記清掃用シート1を被清掃面にあてがい、左右前後に滑らせることにより、大小様々なごみを確実に拭き取ることができる。なお、この不織布の繊維には、チッソ株式会社製の、クリンプ数が25、4mm当たり10~20山(本実施例では、繊維長が5mmであるので1~2山程度)のものを使用した。また、不織布の引っ張り強度は1.0~3.0kg/50mmで、縦横はほぼ同じであった。

【0011】図2は、外周部に太い繊維からなる不織布2aを配し、中央部には細い繊維からなる不織布3aを配し、熱融着させた清掃用シート1aである。外周で髪の毛や糸屑など大きなごみを、中央で土や埃など小さなごみを効率よく拭き取れるように不織布を配置している。図示例では、不織布2aの中央部分に穴を開けて不織布3aを配し、その周辺重なり部分を熱融着させたが、穴を開けずにそのまま不織布3aを重ね、縦状に熱融着させてもよい。

【0012】図3は、中央に細い繊維からなる不織布3bを配し、その両側に太い繊維からなる不織布2bを配し、熱融着させた清掃用シート1bである。両側で髪の毛や糸屑など大きなごみを、中央で土や埃など小さなごみを効率よく拭き取れるように不織布を配置している。

【0013】本発明の清掃用シートを構成する繊維は、熱融着性繊維を用いており、芯綫型非全融タイプの、融点の異なる2種類以上のポリマーから構成された繊維を使用している。この非全融タイプの熱融着繊維は、接着剤の機能と繊維としての機能の両方を兼備したものである。本実施例では、芯部の高融点ポリマーにポリプロピレン、鞘部の低融点ポリマーにポリエチレンを用いた繊維を使用したが、その組合せとして、6ナイロン/ポリエチレン、ポリエステル/ポリプロピレン、ポリエステル/ポリエチレン、6ナイロン/66ナイロン、高融点ポリエステル/低融点ポリエステル、高密度ポリエチレン/低密度ポリエチレンなどが例示できるが、これらに限定されるものではない。

【0014】また、この熱融着性繊維は、短繊維であり、繊維長は2~15mmで、繊度は細いもので1.5~3d/f、太いもので6~32d/fである。さら

に、この短繊維は、クリンプ加工をほどこしたものを使用している。

【0015】シート成型法には、エアレイ法を採用し、不織布は、この熱融着性短繊維を解纏し、空気の流れにのせて搬送し、ウエブを形成させ、熱融着させて熱融着性短繊維を接着させることによって得られた。熱融する方法は特に限定するものではなく、トンネル炉、通風乾燥機、熱シーリング、赤外線、余熱エンボス、加熱エンボスなど、加圧下あるいは無圧下で行えばよい。エアレイ法によると、繊維の配列がランダムになるため、繊維は三次元配向することとなる。その結果、クリンプした短繊維を三次元配向させることにより、ソフトで嵩高、さらに弾力性のある不織布となり、また、熱融着性繊維を熱融着して不織布としたことにより、不織布自身の繊維が脱落することがなく、不織布同士の接着も容易にできることから、様々な不織布の配置にことができる。また、繊維配向は三次元の立体構造を取っているため、垂直方向に固着した繊維が、被清掃面のごみを拭き取りやすく、ソフトで嵩高性に富み、適度の弾力性があるため、拭き取ったごみを繊維間の空間に取込み、強固に保持し、ごみの脱落を防ぐことができ、かつ、被清掃面の小さな溝や凹部までの拭き取ることができる。さらに三次元配向のため、縦横のシート強度差が少なく、どの方向に拭き取ってもシート破断はなく、またネット等の補強材を使用する必要がない。

【0016】

【実施例】本発明の図1に示す清掃用シート1、および比較のため、この清掃用シート1を構成する、太い繊維(繊度6d/f、繊維長5mm、坪量30g/m²)のみで構成される不織布2を比較例1、細い繊維(繊度2d/f、繊維長5mm、坪量20g/m²)のみで構成される不織布3を比較例2とし、さらに、市販品・花王製クイックルワイパーを比較例3、市販品・ライオン製ルックペーパーモップを比較例4とし、これらについて、以下の方法により、その清掃用シートを評価した。

1. ダスト捕集率

30×100cm広さのフローリング床に、試験用ダストとしてJIS Z8901の8種、0.2gを均一に撒き、20×30cmの不織布を10往復させて床に残ったダストを測定し、それから不織布のダスト捕集量を算出した。同様の作業を5回行い、その平均値より捕集率を算出した。

2. 髪の毛捕集率

30×100cm広さのフローリング床に、人頭髪(10cm程度)を5本重ならないように散布し、20×30cmの不織布を10往復させて床に残った髪の毛を測定し、それから不織布の髪の毛捕集量を算出した。同様の作業を5回行い、その平均値より捕集率を算出した。

【0017】上記捕集率評価の試験結果を表1に示す。

【0018】

【表1】

	ダスト捕集	髪の毛捕集率
実施例1	10 %	85 %
比較例1	5 %	40 %
比較例2	13 %	30 %
比較例3（市販品：花王）	8 %	30 %
比較例4（市販品：ライカ）	6 %	30 %

【0019】

【発明の効果】本発明では、繊維長が2~15mmでクリンプを有する、異なる繊維径の（織度の細いもので1.5~3d/f、太いもので6~32d/f）熱融着性短繊維を、それぞれエアレイ法により繊維を三次元配向させウエブとしたものを熱融着して不織布とし、これら2種類もしくはそれ以上の異なる繊維径の熱融着性短繊維からなる不織布を、任意の形状で組み合わせて構成することにより、ソフトで嵩高性に富み、適度の弾力性のある清掃用シートとすることができます。これら清掃用シートは、土、埃などの小さなごみから、髪の毛、糸屑などの比較的大きなごみまで、広範囲のごみの捕集能力に優れ、かつ被清掃面の形状に左右されにくくと共に、

捕集したごみ、および不織布自身の繊維の脱落がなく、適度のシート強度があるものとなる。

【図面の簡単な説明】

【図1】 本発明の1実施形態の清掃用シートを示す平面図である。

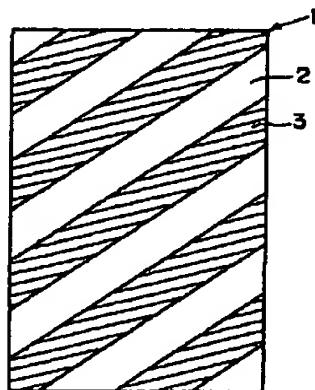
【図2】 本発明の別の実施形態の清掃用シートを示す平面図である。

【図3】 本発明のさらに別の実施形態の清掃用シートを示す平面図である。

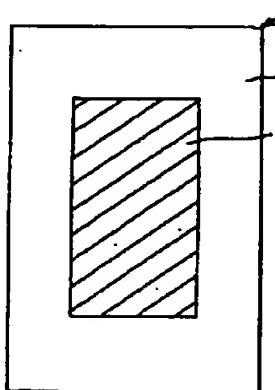
【符号の説明】

- 1、1a、1b 清掃用シート
- 2、2a、2b 太い繊維からなる不織布
- 3、3a、3b 細い繊維からなる不織布

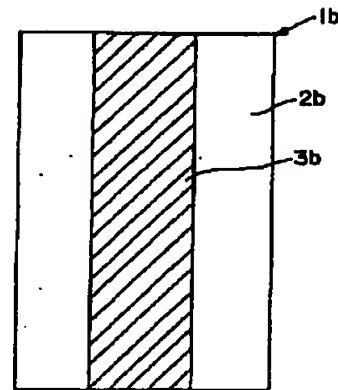
【図1】



【図2】



【図3】



* NOTICES *

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- 2 **** shows the word which can not be translated.
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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the sheet for dry type cleaning which can wipe off the contaminant of a wide range size, dust, etc. with the sheet of one sheet about the business use using the nonwoven object, and the sheet for cleaning for home use.

[0002]

[Description of the Prior Art] Conventionally, many cleaning tools using textile materials are developed, and it is widely used with business use and home use according to the purpose. For example, there is wet or a dry-type sheet for floor cleaning etc. which consists of textile fabrics or a nonwoven fabric, especially since it can be easily used about the object using the nonwoven fabric that there are also many disposable type objects and it is easy to use them, it has spread quickly in recent years.

[0003] For example, a washing active substance is infiltrated into the nonwoven fabric containing heat weld nature fiber, and the technology of carrying out uptake maintenance of the large and small contaminant is indicated by JP,2-152430,A. The thing which wiped away water dirt, a water medical fluid, etc. and was made to hold with the nonwoven object which consists of at least three layers in which the weld nature fiber layer containing heat weld nature fiber was formed between the hydrophilic fiber layer which makes a subject a super-thin fiber layer and hydrophilic fiber, and these layers is indicated by JP,5-93350,A. The thing using electrostatic temperament adhesion of an electric charge nonwoven fabric is indicated by JP,6-240551,A. By carrying out quilting processing of the nonwoven fabric which contains heat weld nature fiber in a pedestal sheet, the uptake of the size wide range comfort is carried out, it excels in fluff-proof omission nature, and what improved flexibility is indicated by JP,6-14859,A. Moreover, a thread cross section is a special configuration, there is sheet intensity in JP,2-191422,A by carrying out embossing of the nonwoven fabric which consists of heat weld nature fiber using the still more nearly spiral continuous glass fiber, there is no fiber defluxion in it, and what gave a dust adsorption power and dust holding power is indicated. Furthermore, although the fiber aggregate is made to interlace a reticulated sheet, there is sheet intensity and there is fiber flexibility required for the uptake performance of a contaminant in JP,7-184815,A, what lost fiber defluxion nature is indicated.

[0004]

[Problem(s) to be Solved by the Invention] However, the sheet for these cleaning has the fault that the eradication nature in the uneven section of a cleaned field is not not much good as compared with a mop-like cleaning supply. Moreover, although improved to attaching small contaminants, such as soil and dust, to one of carrying out the uptake of the big contaminants, such as adhesion, carrying out an adsorption treatment, hair of hair, and waste thread, the contaminant which could not be made to satisfy both at once and carried out the uptake tends to be omitted. Since it is furthermore a nonwoven fabric, own fiber of a nonwoven fabric tends to drop out, and there are many difficulties [say / that there is also no sheet intensity not much]. Moreover, it is also a fact that great time and effort and great cost start at the time of manufacture. Then, this invention raises the eradication nature of the uneven section of a cleaned field, makes the uptake of the contaminant of a size large area possible, prevents defluxion of fiber of a nonwoven fabric the contaminant which carried out the uptake, and own, and aims at offering the sheet for cleaning with sheet intensity simpler further.

[0005]

[Means for Solving the Problem] The sheet for cleaning of this invention is characterized by constituting the heat weld nature staple fiber of a different diameter of fiber from arbitrary configurations combining the nonwoven fabric which considers as the nonwoven fabric in which fiber carried out three-dimensions orientation, and consists of a heat weld nature staple fiber of a different diameter of fiber beyond two aforementioned kinds or aforementioned it, respectively. Moreover, a heat weld nature staple fiber is 2-15mm in fiber length, and it is characterized by having a crimp, and is characterized by constituting combining the nonwoven fabric which fineness becomes from the heat weld nature fiber of 1.5 - 3 d/f, and the nonwoven fabric which consists of heat weld nature fiber of 6 - 32 d/f.

[0006]

[Function] It considers as the nonwoven fabric to which fiber carried out three-dimensions orientation of the heat weld nature staple fiber of a different diameter of fiber of this invention, respectively. If a cleaned field is swept away with the sheet for cleaning constituted from arbitrary configurations combining the nonwoven fabric which consists of a heat weld nature staple fiber of a different diameter of fiber beyond two aforementioned kinds or aforementioned it In the thick nonwoven fabric

portion of fiber, rude big contaminants, such as hair of hair and waste thread, can be taken, and detailed dust and small contaminants, such as soil and dust, can be taken in the nonwoven fabric portion of narrow fiber, and the uptake of the contaminant of a size large area is possible.

[0007] The composition fiber of the sheet for cleaning of this invention is heat weld nature fiber, and since composition fiber is welding, the above-mentioned composition fiber does not drop out at the time of cleaning. Moreover, since it excels in heat-sealing fitness, the nonwoven fabrics of a diameter of fiber different, respectively can be pasted up easily, and arrangement of various nonwoven fabrics is possible.

[0008] Since, as for the sheet for cleaning of this invention, both nonwoven fabrics have taken the spacial configuration of three dimensions, as for fiber orientation, Since the fiber which fixed perpendicularly is a staple fiber with which it is easy to wipe off the contaminant of a cleaned field, and fiber has a crimp, It is rich in a loft, the contaminant which had and wiped off moderate elasticity is incorporated to the space between fiber, and it holds firmly, and it is soft and wiping to the small slot and crevice of a cleaned field is [defluxion of a contaminant can be prevented and] possible. Furthermore, for three-dimensions orientation, even if there are few sheet on-the-strength differences in every direction and they wipe off in which direction, there is no sheet fracture and it does not need to use reinforcing materials, such as a network.

[0009]

[Embodiments of the Invention] Next, based on a drawing, this invention is explained concretely. In addition, the configuration method of each nonwoven fabric of the sheet for cleaning is not limited to these examples.

[0010] Drawing 1 is the sheet 1 for cleaning which made the shape of a stripe of 5cm width of face carry out heat weld of the nonwoven fabric 2 (fineness 6 d/f, fiber length of 5mm, basis-weight 30 g/m²) which consists of thick fiber as an example, and the nonwoven fabric 3 (fineness 2 d/f, the fiber length of 5mm,g [of basis weights// 20], and m²) which consists of narrow fiber by turns. Size various comfort can be certainly wiped off by assigning the above-mentioned sheet 1 for cleaning to a cleaned field, and making it slide before and after right and left. In addition, the number of crimps by Chisso Corp. used the thing of ten to 20 mountain (since fiber length is 5mm in this example, they are about 1-2 mountains) for the fiber of this nonwoven fabric per 25.4mm. Moreover, the tensile strength of a nonwoven fabric was 1.0-3.0kg / 50mm, and every direction was almost the same.

[0011] Drawing 2 allots nonwoven fabric 2a which becomes the periphery section from thick fiber, allots nonwoven fabric 3a which consists of narrow fiber to a center section, and is sheet 1 for cleaning a which carried out heat weld. The nonwoven fabric is arranged so that can be wiped off on a periphery big contaminants, such as hair, waste thread, etc. of hair, and small contaminants, such as soil and dust, can be efficiently wiped off in the center. Although the hole was made in a part for the center section of nonwoven fabric 2a, nonwoven fabric 3a was allotted and heat weld of the circumference lap portion was carried out in the example of illustration, nonwoven fabric 3a may be piled up as it is, without making a hole, and a line may be made to carry out heat weld.

[0012] Drawing 3 allots nonwoven fabric 3b which consists of narrow fiber in the center, allots nonwoven fabric 2b which becomes the both sides from thick fiber, and is sheet 1 for cleaning b which carried out heat weld. The nonwoven fabric is arranged so that can be wiped off big contaminants, such as hair, waste thread, etc. of hair, on both sides and small contaminants, such as soil and dust, can be efficiently wiped off in the center.

[0013] Heat weld nature fiber is used for the fiber which constitutes the sheet for cleaning of this invention, and the fiber which consisted of two or more kinds of polymer from which the sheath-core type non-**** type melting point differs is being used for it. This non-**** type of heat weld fiber combines both the function of adhesives, and the function as fiber. Although the fiber which used polyethylene at polypropylene and the low melting point polymer of the sheath section was used for the high-melting point polymer of a core part in this example, although 6 nylon / polyethylene, polyester/polypropylene, polyester/polyethylene, 6 nylon / 66 nylon, high-melting point polyester / low melting point polyester, a high density polyethylene/low density polyethylene, etc. can be illustrated, it is not limited to these as the combination.

[0014] Moreover, this heat weld nature fiber is a staple fiber, fiber length is 2-15mm, and fineness is a narrow thing, is 1.5 - 3 d/f and a thick thing, and is 6 - 32 d/f. Furthermore, what gave crimp processing is being used for this staple fiber.

[0015] The air lei method was adopted as the sheet casting method, and it was obtained by a nonwoven fabric ****(ing) this heat weld nature staple fiber, carrying and conveying it with the flow of air, making a web form, carrying out heat weld, and pasting up a heat weld nature staple fiber. Especially the method of carrying out heat weld is not limited, and should just perform a continuous furnace, a draught drying machine, a heat cylinder, infrared radiation, remaining-heat embossing, heating embossing, etc. by no pressing down under pressurization. According to the air lei method, since the array of fiber becomes random, three-dimensions orientation of the fiber will be carried out. Consequently, it can be made [by having carried out three-dimensions orientation of the staple fiber which carried out the crimp] arrangement of various nonwoven fabrics from own fiber of a nonwoven fabric not dropping out and adhesion of nonwoven fabrics being made easy by it having been soft, and having become bulky and a further elastic nonwoven fabric, and having carried out heat weld of the heat weld nature fiber, and having considered as the nonwoven fabric. Moreover, the fiber which fixed perpendicularly since the spacial configuration of three dimensions was taken tends to wipe off the contaminant of a cleaned field, fiber orientation incorporates the contaminant wiped off since it was soft, and was rich in a loft and there was moderate elasticity to the space between fiber, holds it firmly, and defluxion of a contaminant can be prevented and it can be wiped off to the small slot and crevice of a cleaned field. Even if there are still few sheet on-the-strength differences in every direction because of three-dimensions orientation and it wipes off in which direction, there is no sheet fracture and it does not need to use reinforcing materials, such as a network.

[0016]

[Example] Constitute this sheet 1 for cleaning for the sheet 1 for cleaning shown in drawing 1 of this invention, and comparison. the thick nonwoven fabric 2 which fiber(fineness-6-d/f, fiber length of 5mm, basis-weight-30-g/m²)-accepts it, comes out, and is constituted -- the example 1 of comparison, and narrow fiber (fineness -- 2 d/f) The fiber length of 5mm and the nonwoven fabric 3 which consists of only basis-weight 20 g/m² were made into the example 2 of comparison, further, the example 3 of comparison, and commercial elegance and the look paper mop made from a lion were made into the example 4 of comparison for commercial elegance and the Kao KUIKKURU wiper, and the sheet for cleaning was evaluated by the following methods about these.

1. To the flooring floor of 30x100cm size of dust collection efficiency, it is JIS as dusts and aerosols for industrial testing. Eight sorts of Z8901 scattered 0.2g uniformly, and the dust which was made to carry out 10 ****'s of 20x30cm nonwoven fabrics, and remained in the floor was measured, and the amount of dust uptakes of a nonwoven fabric was computed. The same work was done 5 times and collection efficiency was computed from the average.

2. If it was 5 piles, the hair of the hair which sprinkled the man hair (about 10cm) to the flooring floor of 30x100cm size of hair collection efficiency of hair so that there might be nothing, and it was made to carry out 10 ****'s of 20x30cm nonwoven fabrics, and remained in it to the floor was measured, and the amount of hair uptakes of the hair of a nonwoven fabric was computed. The same work was done 5 times and collection efficiency was computed from the average.

[0017] The test result of the above-mentioned collection-efficiency evaluation is shown in Table 1.

[0018]

[Table 1]

	ダスト捕集率	髪の毛捕集率
実施例 1	10 %	35 %
比較例 1	5 %	40 %
比較例 2	13 %	30 %
比較例 3 (市販品 : 花王)	8 %	30 %
比較例 4 (市販品 : ライオン)	6 %	30 %

[0019]
 [Effect of the Invention] A different diameter of fiber in which fiber length has a crimp by 2-15mm by this invention (it is the narrow thing of fineness 1.5 to 3 d/f) It is thick, and carry out heat weld of what was made to carry out three-dimensions orientation of the fiber by the air lei method, respectively, and made the web 6-32d [f] heat weld nature staple fiber, and it considers as a nonwoven fabric. By constituting from arbitrary configurations combining the nonwoven fabric which consists of a heat weld nature staple fiber of these two kinds or a different diameter of fiber beyond it, it can be soft, can be rich in a loft, and can consider as the sheet for cleaning with moderate elasticity. The sheet for these cleaning does not have defluxion of fiber of a nonwoven fabric the contaminant which carried out the uptake, and own, and has moderate sheet intensity while even comparatively big contaminants, such as hair of hair and waste thread, are excellent in the uptake capacity of a wide range contaminant from small contaminants, such as soil and dust, and cannot be easily influenced by the configuration of a cleaned field.

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OPERATION

[Function] It considers as the nonwoven fabric to which fiber carried out three-dimensions orientation of the heat weld nature staple fiber of a different diameter of fiber of this invention, respectively. If a cleaned field is swept away with the sheet for cleaning constituted from arbitrary configurations combining the nonwoven fabric which consists of a heat weld nature staple fiber of a different diameter of fiber beyond two aforementioned kinds or aforementioned it In the thick nonwoven fabric portion of fiber, rude big contaminants, such as hair of hair and waste thread, can be taken, and detailed dust and small contaminants, such as soil and dust, can be taken in the nonwoven fabric portion of narrow fiber, and the uptake of the contaminant of a size large area is possible.

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